4V Drive Pch MOS FET

RSQ025P03

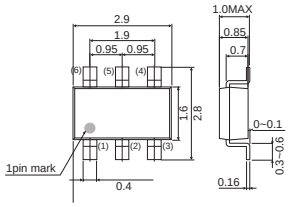
●Structure
Silicon P-channel MOS FET

●Features
1) Low On-resistance.(120mΩ at 4.5V)
2) High Power Package.(P_D=1.25W)
3) High speed switching.
4) Low voltage drive. (4V)

●Applications
DC-DC converter

●External dimensions (Unit : mm)

TSMT6



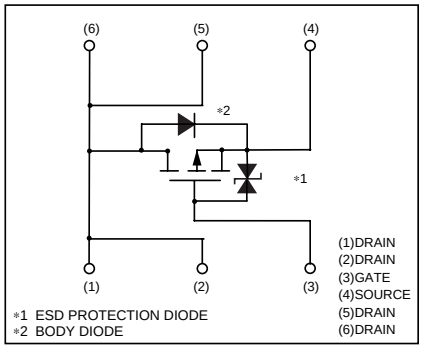
Each lead has same dimensions

Abbreviated symbol : TP

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RSQ025P03		○

●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain−source voltage		V_{DSS}	−30	V
Gate−source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	±2.5	A
	Pulsed	I_{DP} ∗1	±10	A
Source current (Body diode)	Continuous	I_S	−1	A
	Pulsed	I_{SP} ∗1	−4	A
Total power dissipation		P_D ∗2	1.25	W
Channel temperature		Tch	150	°C
Range of Storage temperature		Tstg	−55 to +150	°C

∗1 Pw≤10μs, Duty cycle≤1%
∗2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) ∗	100	°C / W

∗ Mounted on a ceramic board.

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	±10	μA	V_{GS}=±20V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	–30	–	–	V	I_D=–1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	–1	μA	V_{DS}=–30V, V_{GS}=0V
Gate threshold voltage	$V_{GS(th)}$	–1.0	–	–2.5	V	V_{DS}=–10V, I_D=–1mA
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	80	110	mΩ	I_D=–2.5A, V_{GS}=–10V
		–	120	165	mΩ	I_D=–2.5A, V_{GS}=–4.5V
		–	145	200	mΩ	I_D=–1.25A, V_{GS}=–4.0V
Foward transfer admittance	$\|Y_{fs}\|$ *	1.2	–	–	S	V_{DS}=–10V, I_D=–1.25A
Input capacitance	C_{iss}	–	320	–	pF	V_{DS}=–10V,V_{GS}=0V f=1MHz
Output capacitance	C_{oss}	–	85	–	pF	
Reverse transfer capacitance	C_{rss}	–	60	–	pF	
Turn-on delay time	$t_{d(on)}$ *	–	8	–	ns	I_D=–1.25A V_{DD}≒–15V V_{GS}=–10V R_L=12Ω R_G=10Ω
Rise time	t_r *	–	11	–	ns	
Turn-off delay time	$t_{d(off)}$ *	–	33	–	ns	
Fall time	t_f *	–	7	–	ns	
Total gate charge	Qg	–	4.4	–	nC	V_{DD}≒–15V V_{GS}=–5V I_D=–2.5A
Gate-source charge	Qgs	–	1.0	–	nC	
Gate-drain charge	Qgd	–	1.4	–	nC	

*PULSED

●**Body diode characteristics** (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	–	–	–1.2	V	I_S=–0.9A, V_{GS}=0V

●Electrical characteristic curves

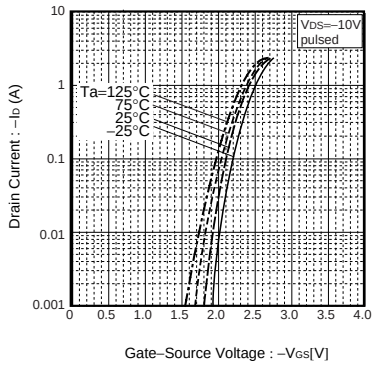


Fig.1 Typical Transfer Characteristics

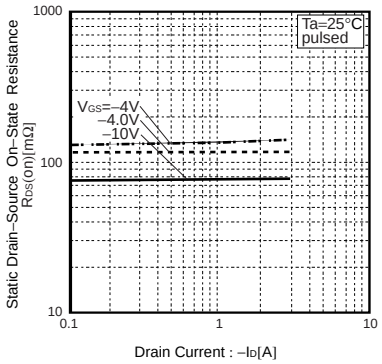


Fig.2 Static Drain−Source On−State Resistance vs.Drain Current

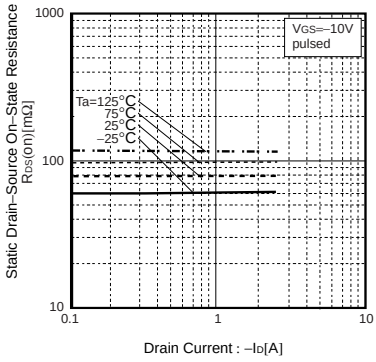


Fig.3 Static Drain−Source On−State Resistance vs.Drain Current

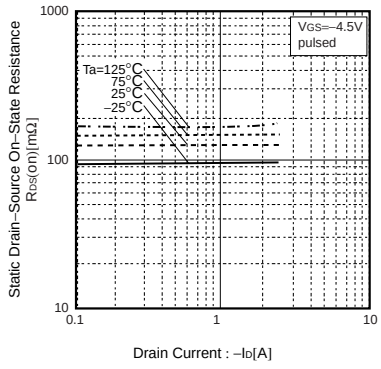


Fig.4 Static Drain−Source On−State Resistance vs.Drain−Current

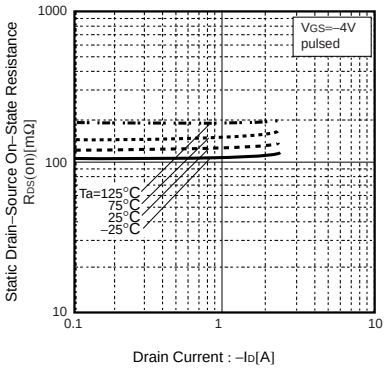


Fig.5 Static Drain−Source On−State Resistance vs.Drain−Current

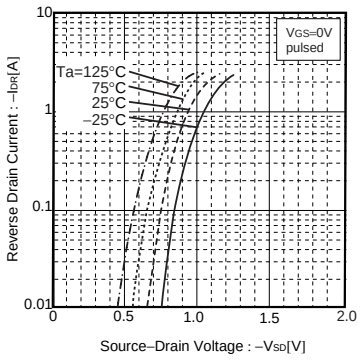


Fig.6 Reverse Drain Current Source-Drain Voltage

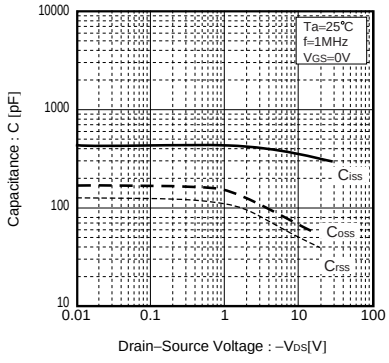


Fig.7 Typical Capacitance vs.Drain−Source Voltage

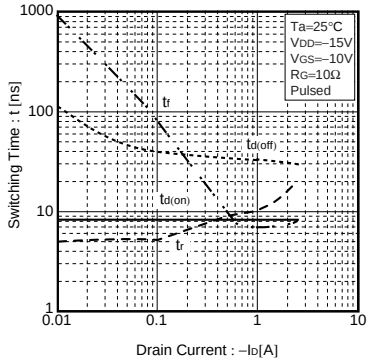


Fig.8 Switching Characteristics

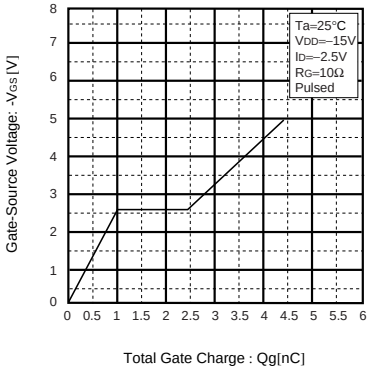


Fig.9 Dynamic Input Characteristics

●**Measurement circuits**

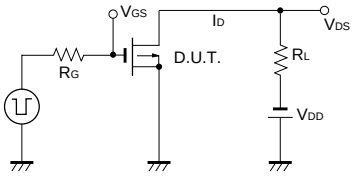


Fig.10 Switching Time Measurement Circuit

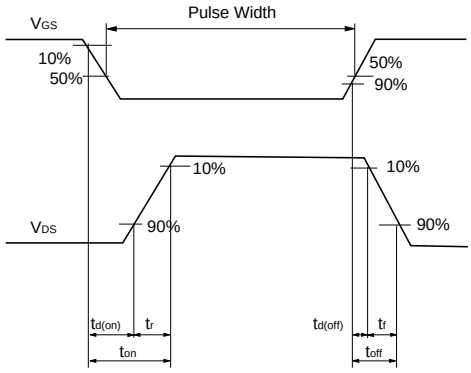


Fig.11 Switching Waveforms

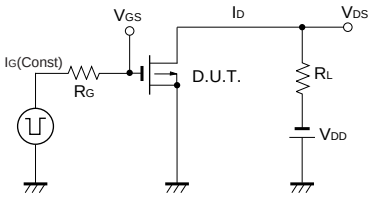


Fig.12 Gate Charge Measurement Circuit

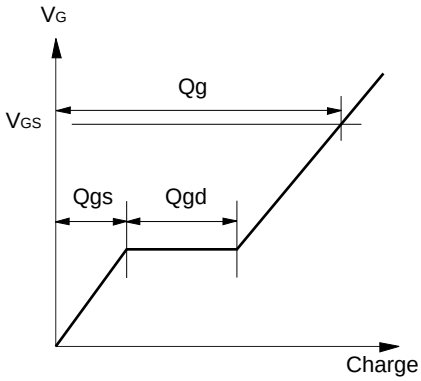


Fig.13 Gate Charge Waveforms

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